United States Geological Survey Mission to Central America: Response to Hurricane Mitch

- *National Mapping Division*
- *Geologic Division*
- *Biological Resources Division*
- *Water Resources Division*

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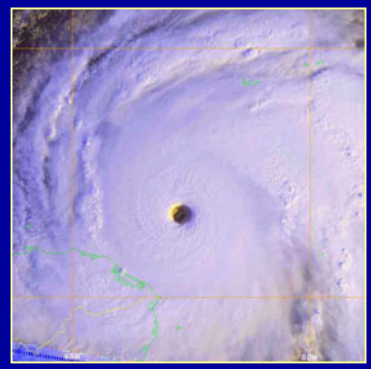
Center for Integration of Natural Disaster Information

USGS Works With Partners to Meet the Challenge of Providing Disaster Information

The U.S. Geological Survey's Center for Integration of Natural Disaster Information (CINDI) is a research facility for (1) developing and evaluating technology for information integration and dissemination, (2) performing research in data integration, analysis, modeling, and decision support, and (3) supporting the ongoing evolution of the USGS processing and delivery of hazards data.

Research results are used in the development of applications and tools that will help citizens, local and State officials, and Federal managers use scientific observations to make well-informed decisions.



Hurricane Mitch

In cooperation with partners from the Federal government and private industry, the CINDI has developed a set of images of the area in Central America that has been affected by Hurricane Mitch. USGS partners on this project are the National Oceanic and Atmospheric Administration, National Imagery and Mapping Agency, Smithsonian Institution, National Aeronautics and Space Administration, Central Intelligence Agency, Environmental Systems Research Institute, Microsoft, and EarthSat.

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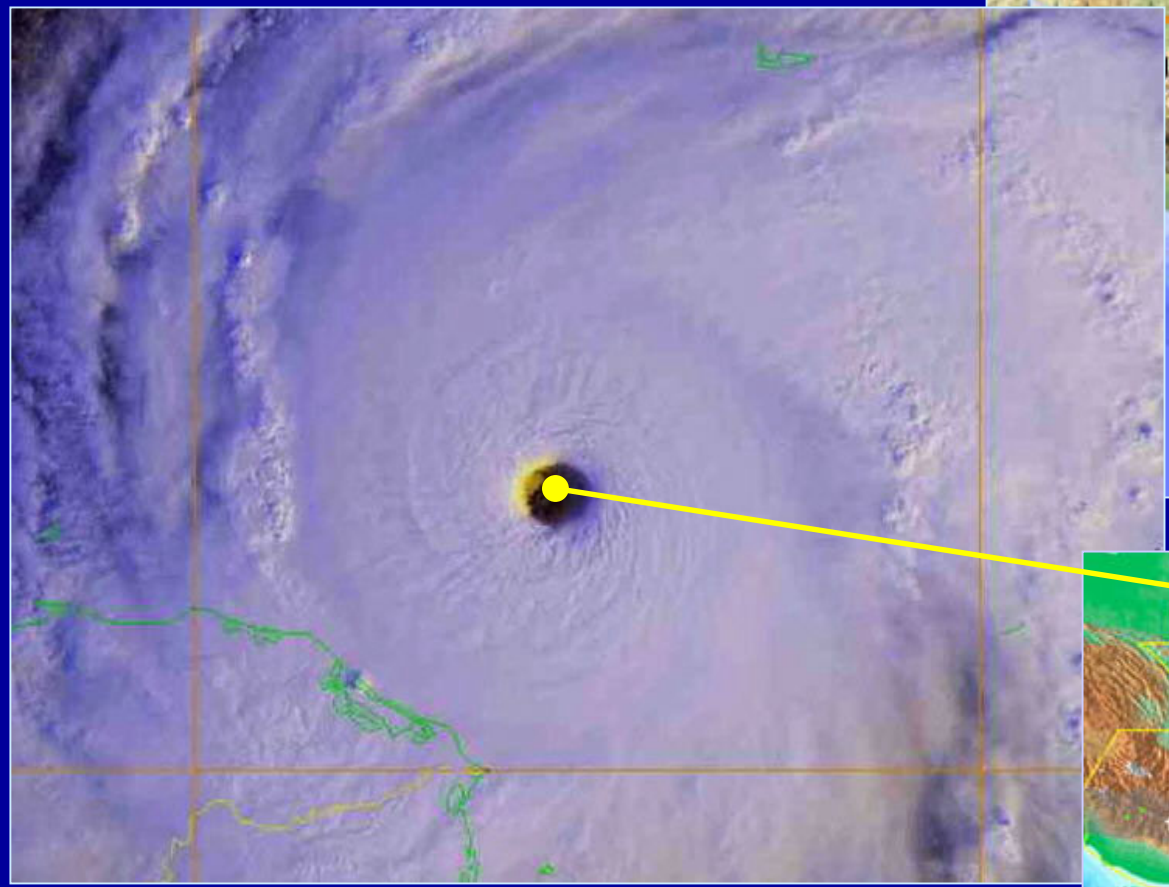
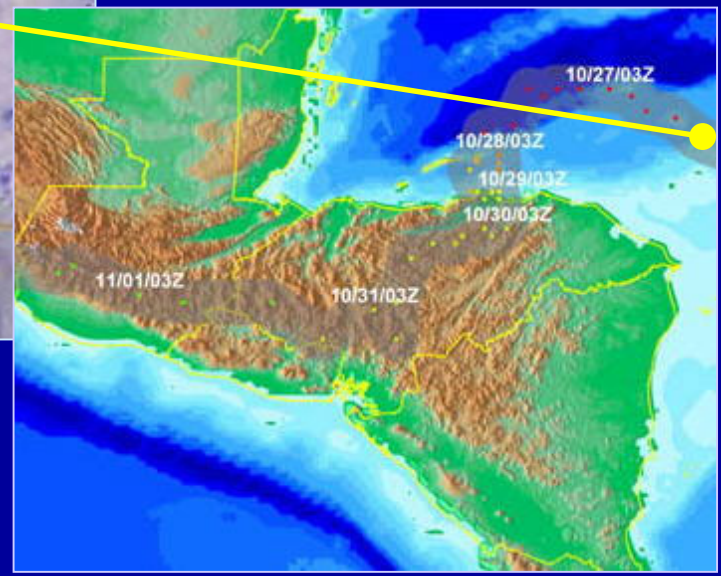
Hurricane Mitch





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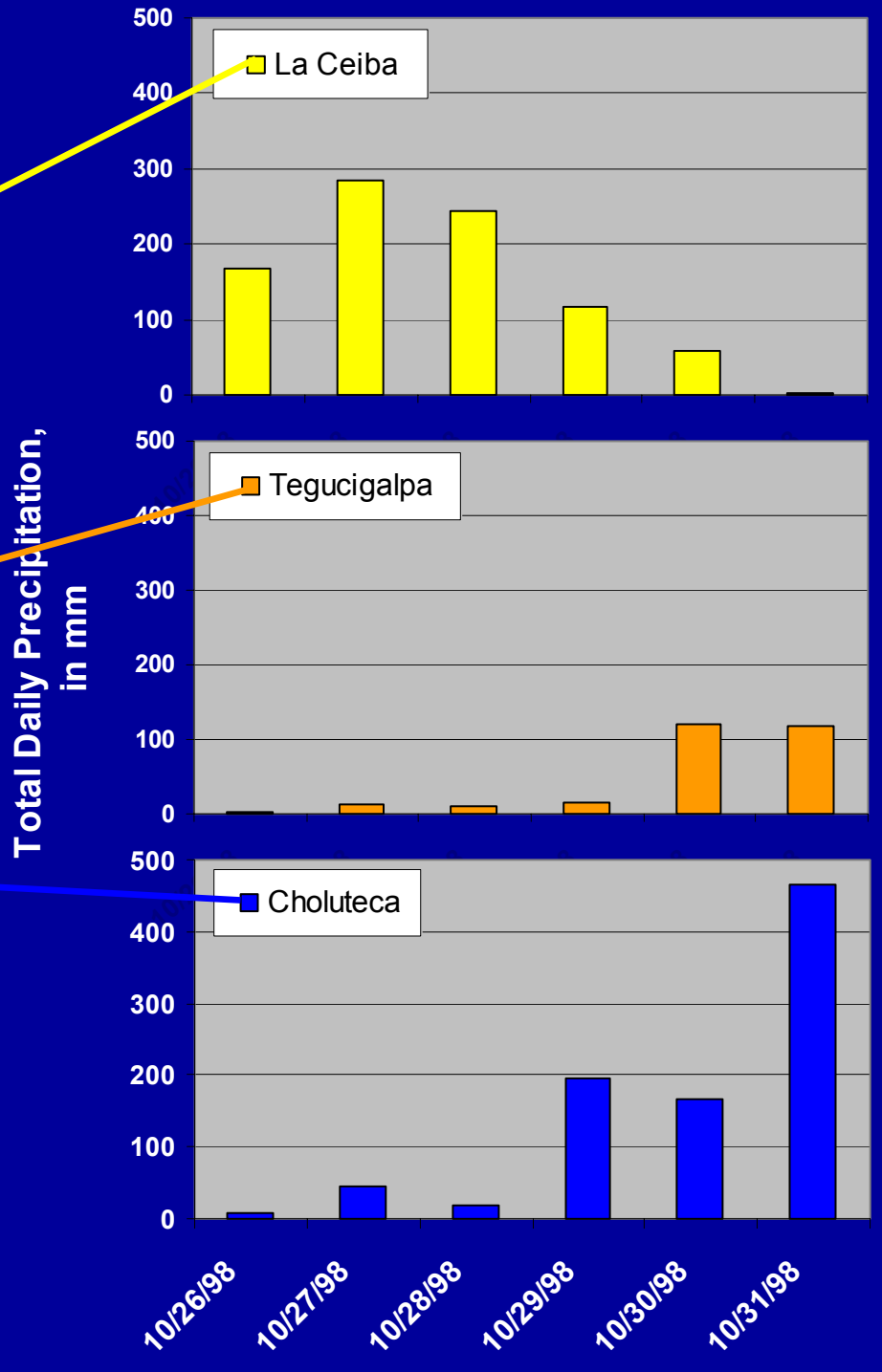
Precipitation



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Mitch Impacts: Honduras

Flooding and Landslides

- 7,000 Fatalities
- 5,000 Missing
- 33,000 Homes Destroyed
- 50,000 Homes Heavily Damaged
- 95 Bridges Destroyed
- 75 Bridges Heavily Damaged
- 70% Road Network Damaged Nationwide

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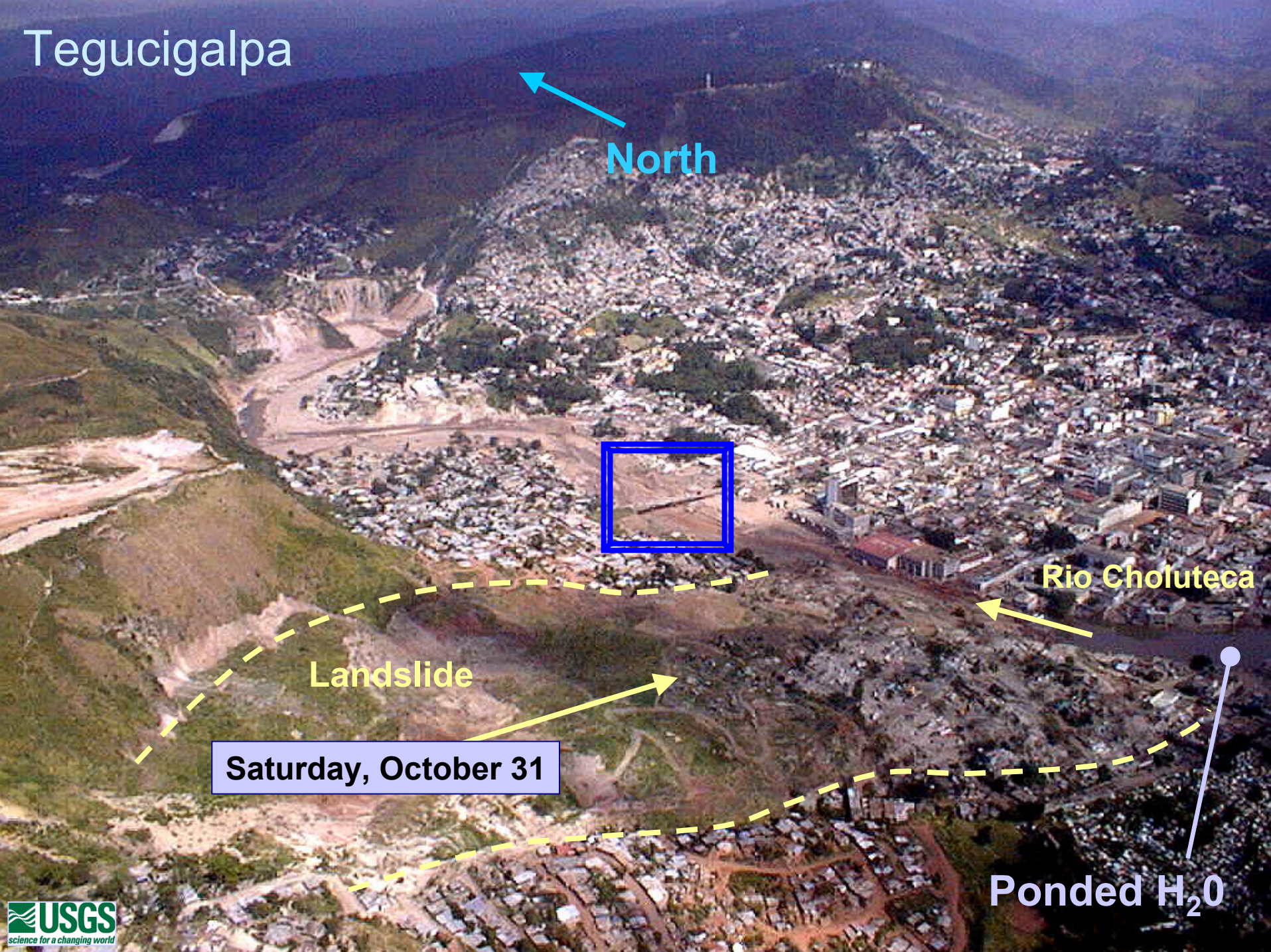
Tegucigalpa
North
Rio Choluteca
Landslide
Saturday, October 31
Ponded H_2O
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El Berrinche Landslide:
"Lagoon" on The Rio Choluteca

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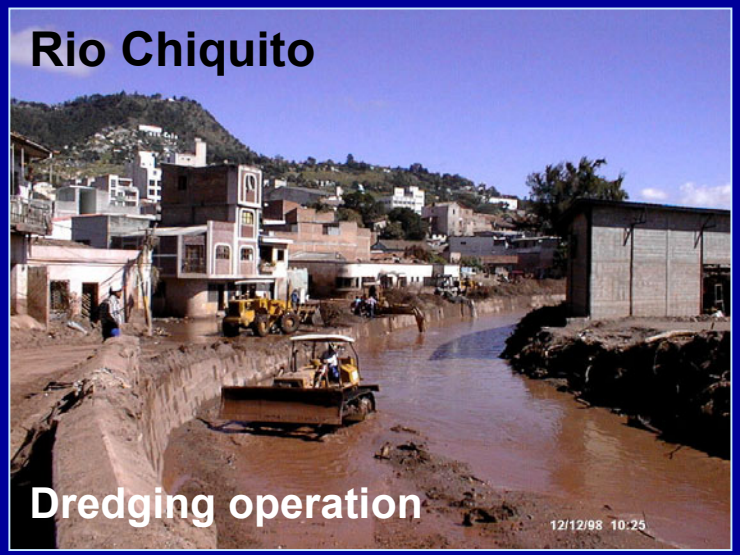
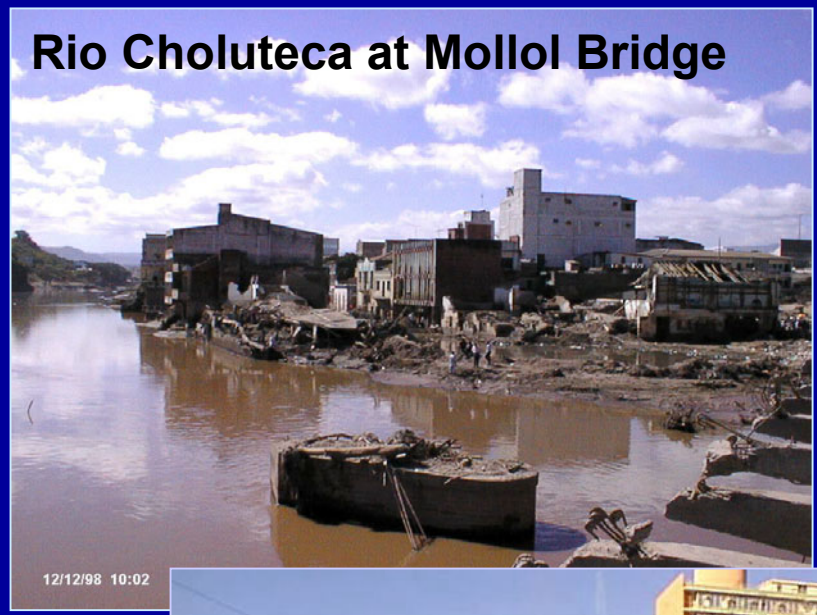
Tegucigalpa





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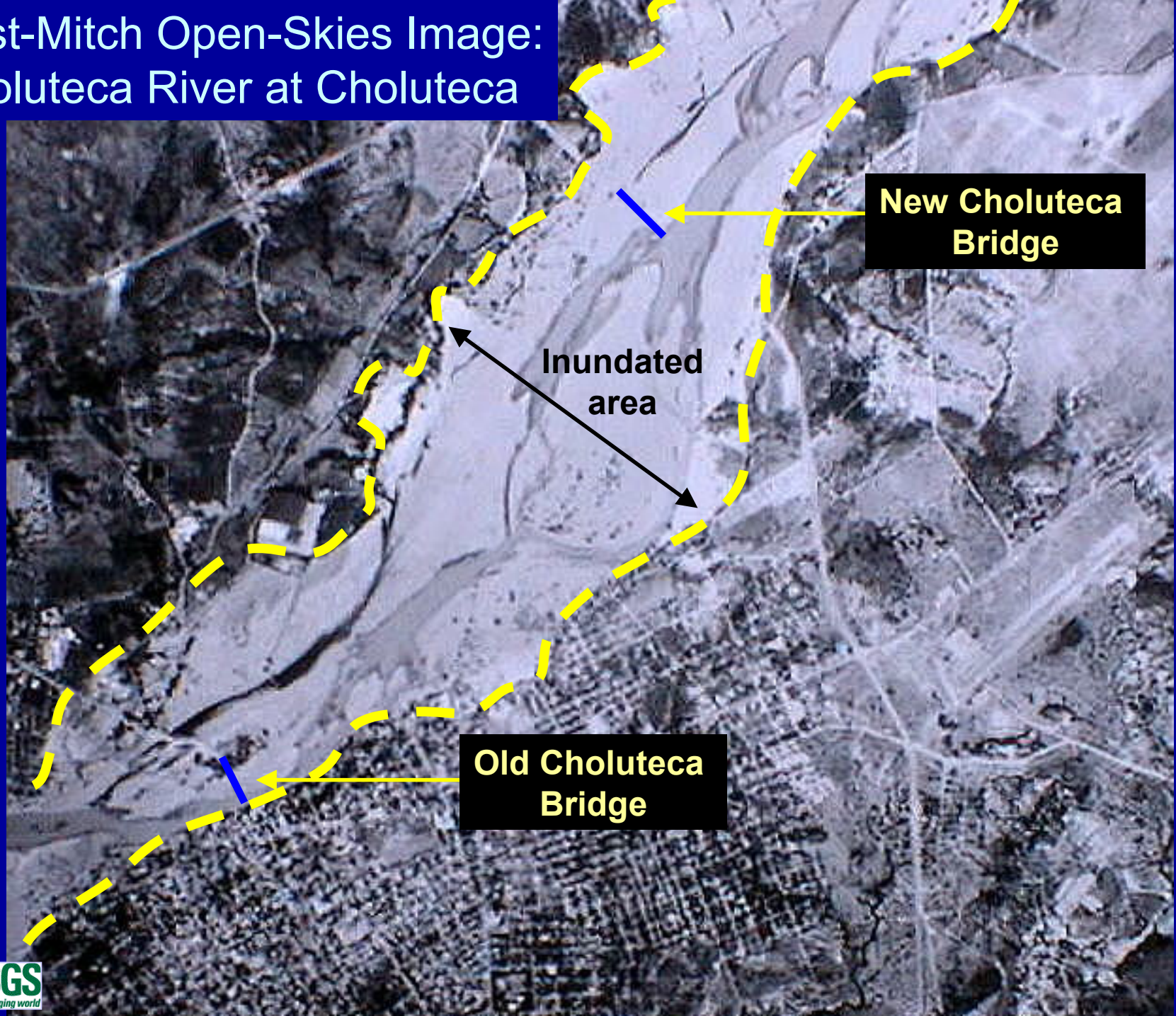
Post-Mitch Open-Skies Image: Choluteca River at Choluteca



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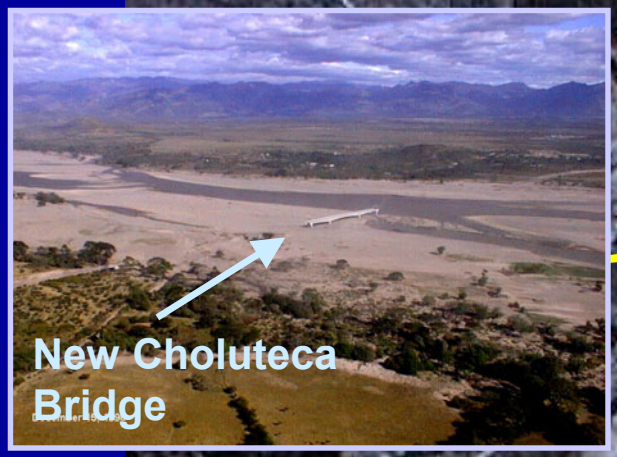

Inundated
area

Location of Destroyed Neighborhoods

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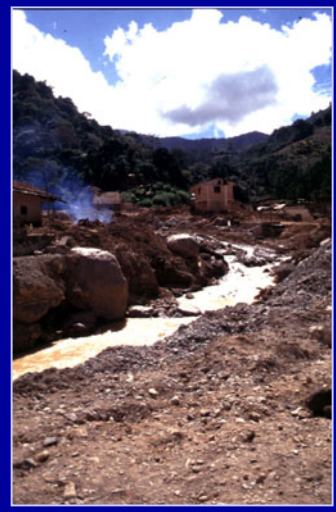
San Juancito



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Shrimp Farms & Mangroves

- Important export (>$97 M in 1992)
- Near 100% loss of shrimp in ponds
- Adverse effects on natural shrimp population & habitat
- Mangrove loss (>500 ha) and erosion

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Sedimentation of Agricultural Fields: Southern Honduras

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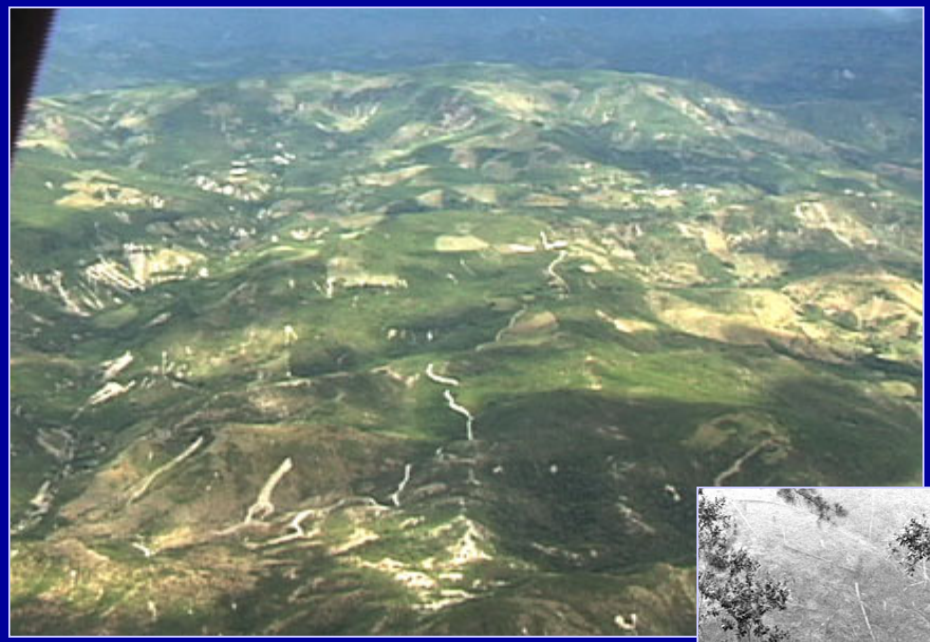
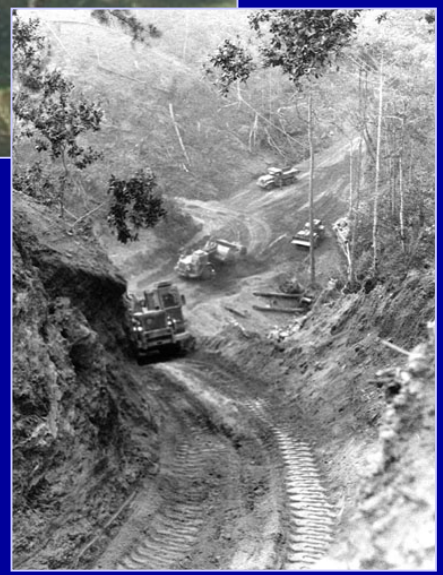
Deforestation Increased Impacts of Mitch





- More forest removed: more debris flows
- Most sediment deposited in fields and estuaries came from debris flows

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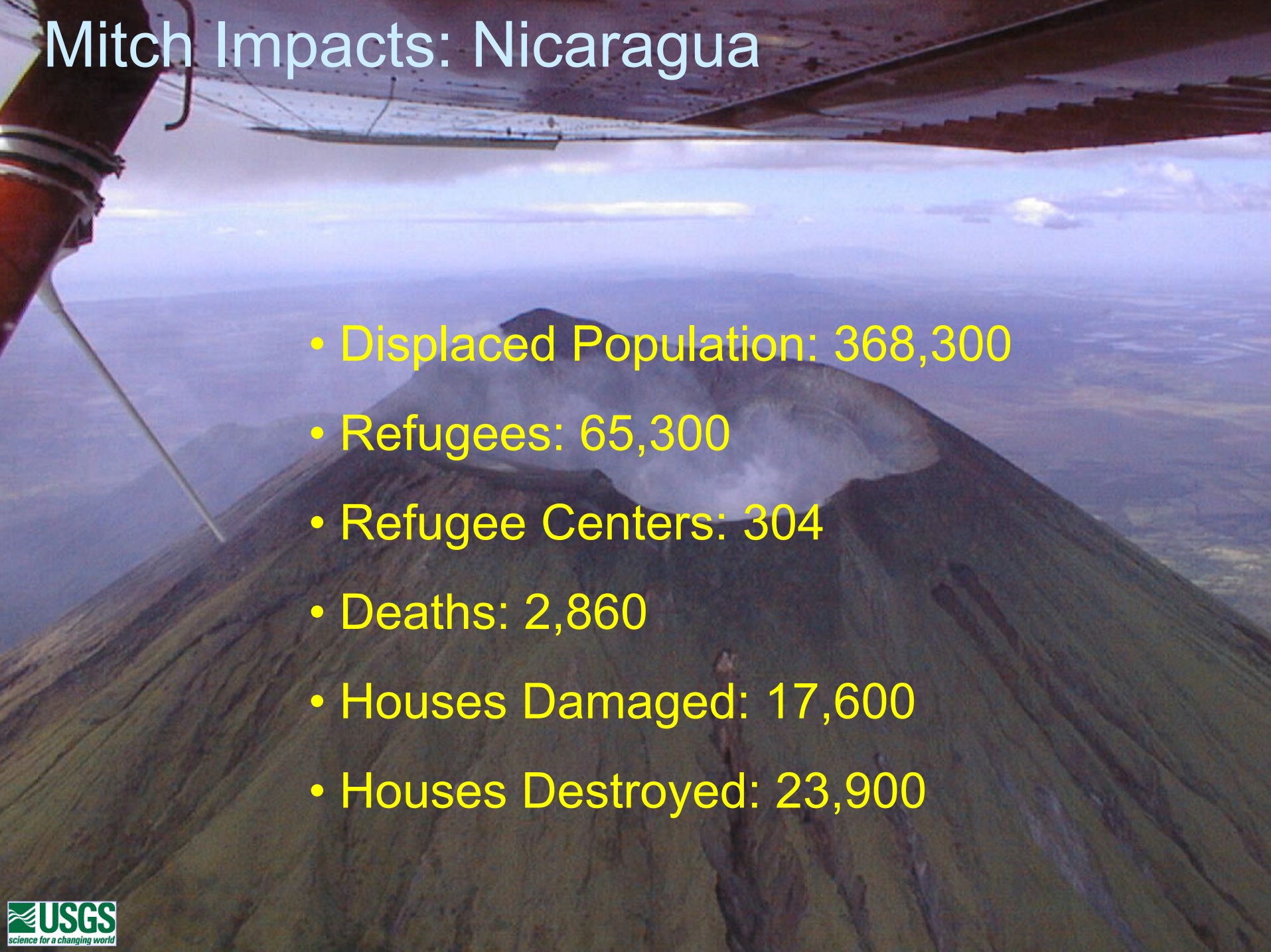
Mitch Impacts: Nicaragua



- Displaced Population: 368,300
- Refugees: 65,300
- Refugee Centers: 304
- Deaths: 2,860
- Houses Damaged: 17,600
- Houses Destroyed: 23,900

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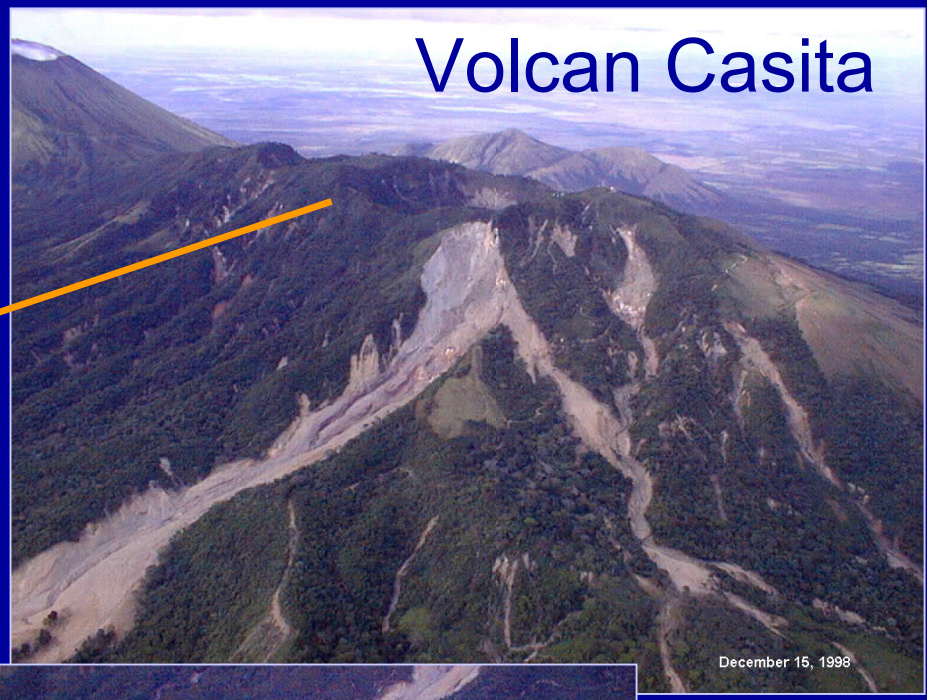
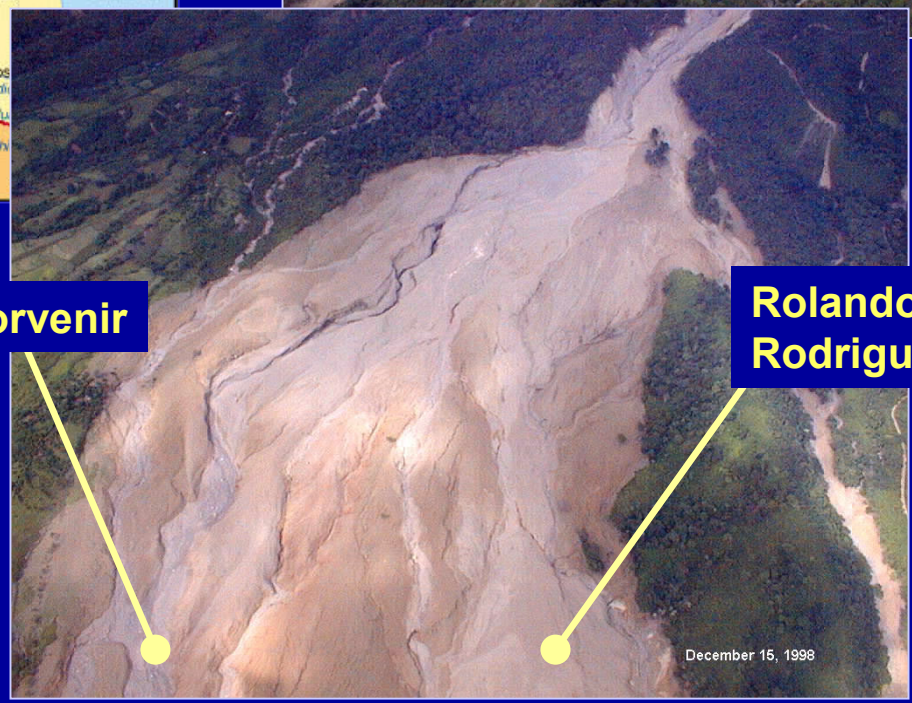
Volcan Casita





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Outline of Future Activities in Support of the Hurricane Mitch Reconstruction Effort

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Current Event

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CINDI home

Disaster in Central America

USGS Science team in Honduras

Click here for daily updates

DOI Factsheet: DOI Science Helping Honduras Recover from Hurricane Mitch

Central America Interactive Atlas:
Click here to make your own map of Central America and download data.

- Central America Disaster Overview
- Central America Disaster Atlas
- Central America Disaster Links

Location map showing track of Hurricane Mitch

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Atlas index

Disaster in Central America

CINDI home

Central America Disaster Atlas

Hurricane Mitch was the most destructive hurricane in the history of the western hemisphere. From Oct. 27 through Nov. 1, 1998, it battered the Caribbean coast and parts of Honduras, Nicaragua, El Salvador, and Guatemala, in Central America. This atlas describes aspects of Central America that were impacted by the hurricane's force such as bridges destroyed and impact on electrical lights and utility lines. Another atlas page tracks the path and intensity of the storm. Take a look!

Atlas Credits

New pages:

Honduras Landslide Susceptibility

Map of Guatemala | Map of Honduras and El Salvador | Map of Honduras and Nicaragua

Map of Nicaragua | Annual Precipitation | Hurricane Mitch Total Precipitation

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Introduction to On Line Maps
View a Map and Create Your Own Map

These Web pages allow you to view maps and make custom maps from a wide variety of sources related to the Hurricane Mitch event and to the cultural and physical resources of El Salvador, Guatemala, Honduras, and Nicaragua. Most data shown on these maps, in addition to other data, can be downloaded in shapefile format from the USGS CINDI ftp site.

New map and damage information will be added as it is received and processed.

Select one of the maps below to begin.

Hurricane Mitch Event and Impacts

Reference Basemap

Topographic Maps

Landsat and Radar Images

Aerial Photographs

Environment and Resources

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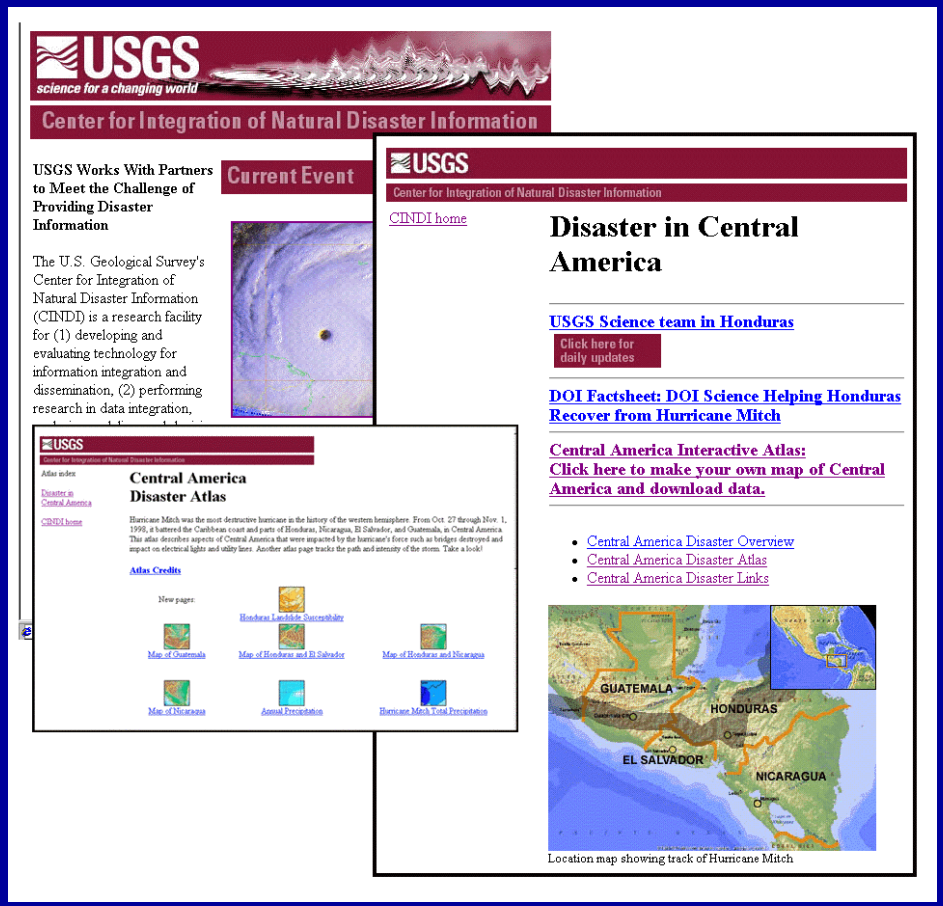
I – Providing basic information tools



USGS will continue its present role as a data gatherer, archiver, and integrator for the reconstruction effort. This will include providing and/or facilitating access to existing digital maps, aerial photography, satellite imagery and other data, and developing integrated databases from these sources.

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II – Acquisition of New Data

Assist in the acquisition of new aerial photography and satellite imagery; gather new hydrologic, geologic, and biologic field data for use in damage and risk assessments

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III – *Damage/Risk Assessment & Mitigation*

Further characterize the impact of Mitch-related flooding and landslides in priority areas; assess and monitor the potential threats from future events to population, infrastructure, and agriculture.

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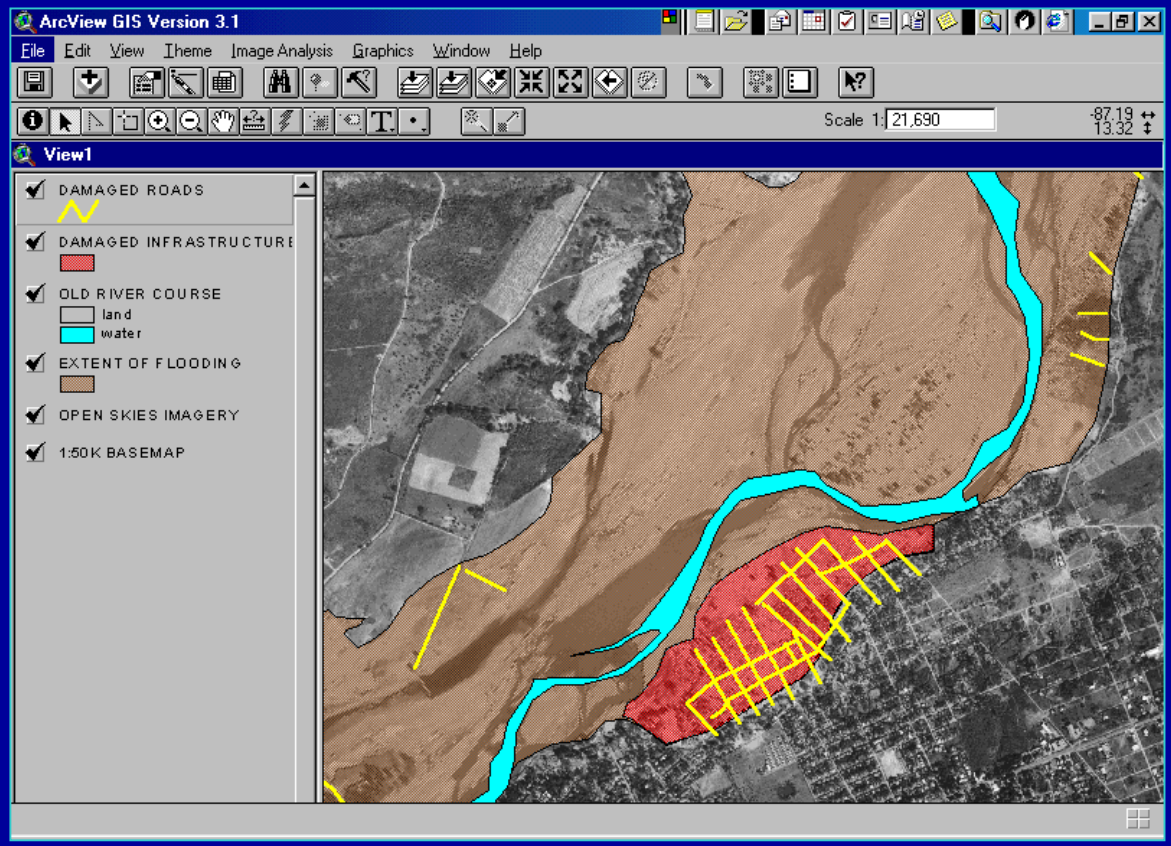
IV – Data Integration and Delivery



Integrate the results of damage and risk assessments with base maps, aerial photography, and satellite imagery in a GIS format; deliver these data sets as working tools to guide decision-making in the reconstruction effort

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V – Capacity Building

All USGS activities will be conducted in close cooperation with counterpart agencies in Central America. Additional training and equipment/software will be provided to strengthen existing capacities and build new in-country capabilities to maintain these programs in the future.

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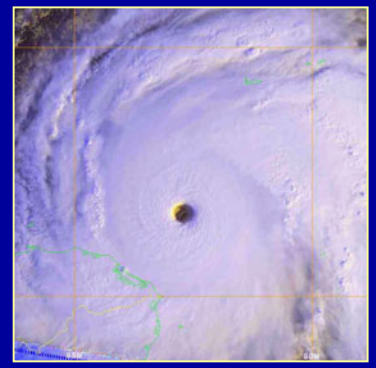

USGS / NASA COLLABORATION

Satellite Data Acquisition (Landsat, MODIS, ASTER, SRTM) - GSFC

Aerial Data Acquisition (LIDAR) - Wallops

Aerial IFSAR Data Acquisition - Stennis CRSP

Workshop for Central America Remote Sensing Data Requirements - MSFC & NASA HQ

Regional Land Use/ Land Cover

Other Geo-spatial Data Analysis - TBD

Training/Capacity Building in Central America - TBD